

# Early Detection & Response to Wildlife Disease: EarthRanger Health

**OVERVIEW.** Africa is a biologically and culturally diverse continent, home to some of the most endangered and iconic species on the planet. Wildlife species survival across the continent is threatened by habitat loss, poaching, deliberate poisoning, disease, and climate change. Outbreaks of disease in animals pose an increasing threat to biodiversity conservation and public health but, in many rural parts of the world, are difficult to spot.

One such area is Africa's grasslands where an estimated 50-200 million pastoralists and their livestock move between water sources and seasonal grazing areas in incredibly biodiverse landscapes. Remoteness and the mobility necessitated by livestock management practices that frequently cross national borders, have led to the inadequate integration of people, their animals and the wildlife they coexist with into health services. As such, many rural populations of wildlife and livestock in sub-Saharan Africa are unaccounted for in disease surveillance and outbreak response efforts.

To address this gap, the Smithsonian's Global Health Program (SGHP) and partners are currently piloting a new front-line, participatory syndromic surveillance system with the government of Kenya using the EarthRanger platform ([EarthRanger Health](#)), which puts real-time reporting of animal health into the hands of wildlife rangers who are tasked with patrolling biodiverse, geographically remote landscapes, thus connecting them to centralized disease surveillance efforts. The platform has been designed to link rangers and other members of pastoralist communities directly to wildlife veterinary professionals to initiate a coordinated One Health response.

The system is currently being piloted on 10 community conservancies in central, northern and southern Kenya, which are already using the EarthRanger system. This is taking place in close partnership with Kenya Wildlife Service (KWS), the Wildlife Research and Training Institute (WRTI) the Directorate of Veterinary Services (DVS), San Diego Zoo Wildlife Alliance and the International Livestock Research Institute. KWS and WRTI have recently adopted EarthRanger as their centralized wildlife monitoring system (with data feeding in from national parks, community, and private conservancies across the country), and through consultations they have indicated their desire to integrate the health module into this if piloting is successful. We are seeking to extend the scope of this pilot within the context of our work in Kenya, and pursue technological development of the platform's data analytics.

**POTENTIAL RESEARCH THEMES.** The Smithsonian's Global Health Program and partners in Kenya seek a two-year postdoctoral fellow to examine the potential for testing and implementation of the platform in community conservancies where it is not currently being piloted (for example in relation to conservation activities taking place on Mt Kenya and in the Maasai Mara), and to pursue innovative

research that evaluates the system's sensitivity and specificity to detecting disease outbreaks, and explores the potential for the system to provide professionals working on the ground with real-time 'epidemiological intelligence' to support in-field decision-making. Proposals should identify key research questions relating to how near real-time wildlife health data can be interpreted with the help of statistical models and artificial intelligence, to inform epidemiological decision-making (in the realms of biodiversity conservation and/or public health), that will be addressed through the fellowship with the support of Smithsonian programs.

### **Qualifications**

- Doctoral-level degree (e.g., in Veterinary Medicine, or a PhD in epidemiology, data science, or wildlife health) from a recognized university
- Fluent in English
- At least two-years working experience, preferably in the field of wildlife health and/or disease surveillance.

### **Criteria for Selection**

Applications are evaluated and fellows are selected by scholars in appropriate fields, on the basis of the proposal's merit, and the applicant's ability to carry out the proposed research. Experience with statistical data analysis/computer programming tools (such as JavaScript, R, python) is desirable but not required.